



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/427,775	10/26/1999	JERRY D. KIDD	88742.472005	3747

24347 7590 12/14/2006

HUNTON & WILLIAMS LLP
INTELLECTUAL PROPERTY DEPARTMENT
1601 BRYAN STREET
ENERGY PLAZA - 30TH FLOOR
DALLAS, TX 75201

EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
----------	--------------

1762

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/427,775

Applicant(s)

KIDD ET AL.

Examiner

Marianne L. Padgett

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/15/06, 6/23/06 & 10/4/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) 104,106,115,116 and 134-150 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 151 is/are allowed.
- 6) ☒ Claim(s) 1-5,7-17,24,25,27-50,52-56,67-68,70-82,85-103, 105,111-114, 117- 129,132 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-5,7-17,24,25,27-50,52-56,67-68,70-82,85-109,111-129,132 and 134-151.

Art Unit: 1762

1. Applicants amendments of 10/4/2006 appear to have removed the 112 first & second rejections by removing the new matter from the claims and clarifying the language of independent claim 151. It is further noted that with removal of the 112 problems in independent claim 151 there remains no rejection over this claim with its specific configurational/orientational limitations, such that claimed 151 now appears to be allowable over previously applied art and formal issues.

The amendments to independent claims 1 & 129 return the claims to ranges previously claimed in the 4/12/2005 amendment & previously rejected in the action of 7/26/2005.

2. The IDS of 6/15/2006 is further made of record, noting that of the three references cited only that to Weinhart is directed to an evaporation technique, and it is thermal of operation, does not use plasma, and does not discuss parameter ranges has claimed or unclaimed.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5, 7, 8, 15-17, 24, 25, 27-28, 32-50, 52-57, 59-62, 67-68, 70-81, 85-88, 90-95, 98-103, 105, 111-114, 118-129 and 132 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (4,420,386 or 4,468,309), as applied in sections 4 of Paper No. 13 (mailed

Art Unit: 1762

5/22/02) and section 8 of Paper No. 21 (mailed 10/10/03), in view of Sakamoto et al (4,725,345) or Yaginuma et al (6,117,280) or Nimmagadda (4,540,596), as discussed in section 2 of the action mailed 10/12/04.

As discussed in section 2 of the action of 10/12/2004, Claim 1 has been amended to narrow the voltage of the negative DC signal to the substrate to be between 1-1,500 volts, while claim 129 is noted to limit the DC to between 500-750 volts. The White references have generic teachings of using RF+DC on the substrate (column 2, lines 59-68 in (386)), with exemplary values of negative bias given as 3-5 KV (3,000-5,000 volts), hence while the general disclosure is suggestive of a broader possible range, there is no explicit disclosure of using lower DC values with the RF to cause the taught attraction of ions. The particular effects of a specific range of DC voltage with respect to the taught attraction for the deposition would have been expected to vary with the particular overall composition of the deposition environment. Thus the material being deposited, as illustrated by Sakamoto et al (D.C. voltage of hundreds of volts for ion plating process of Ti + Ar + H₂, columns 5-6); Yaginuma et al (Examples 1-6 use DC bias voltages of -400 V for cleaning with H₂, -500 V for nitriding with ammonia, -1000 V when metal, such as Ti vapor is being supplied, etc., column 7-11); or Nimmagadda (claim 1 teaches metal nitrides, oxide or carbides, where -50 to -500 volts DC are used for deposition, lowered from -500 to -5000 V DC for cleaning). Therefore, it would have been obvious for one of ordinary skill in the art to determine optimum DC voltage to attract deposition ions to the substrate being coated, depending with specific reagents being employed, noting that the prior art recognizes use of higher absolute values of voltages for cleaning operations, which will be generally removing rather than depositing material. It is noted that the independent claims are completely generic as to the deposit and applicant's specification (page 3) teaches 1-5000 V negative DC with no special effect attributed to the now lower claimed range. The paragraph bridging pages 29-30 teaches 1-5000 V, preferably negative, but not always required, as in a preferred embodiment -500 to -750 V, but no special effects are attributed to use of these values in the

Art Unit: 1762

specification. Applicants have alleged previously that 3-5 KV results in undesirable or unacceptable damage (page 28, responses of 5/10/04). Where is this taught in the specification that actually teaches use of such values? As seen above in the prior art, more energetic ions are generally known to be used for cleaning thus etching, than for deposition, hence it would appear that applicant might be referring to this well known concept.

Related to the discussion in section 6 of the action of 3/23/2006, the primary references to White are directed to a vapor deposition process that biases the substrate, such that they may or may not be excluded by applicants' language previous language, which excluded "implantation" & other energy levels, depending on previously undefined ranges, which have been replaced by specific ranges, which no longer require specific effects be excluded for voltages applied to the substrate. However it remains relevant, that as the White references apply voltage to the substrate so as to attract positive ions towards the substrate for a vapor deposition process to cause ion plating, while they do not to exclude ion implanting or etching processes, neither are such actions necessarily included. The White references still remain appropriate for application to these claims, and the prior art previously discussed combinations would appear to remain appropriate, especially as a specific effects other than vapor deposition are no longer required by the claims, and the specific parameters do not appear to require any unusual or unexpected affect, nor do the parameters appear to be significantly different from those known for such plasma vapor deposition processes as discussed above, which are inclusive of ion plating as in the White references.

5. Claims 29-31 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (386 or 309), in view of Sakamoto et al or Yaginuma et al or Nimmagadda as applied to claims 1-5, 7, 8, 15-17, 24-25, 27-28, 32-50, 52-57, 59-62, 67-68, 70-81, 85-88, 90-95, 98-103, 105, 111-114, 118-129 and 132 above, and further in view of Grossman et al (5,078,847), as discussed in Section 5 of Paper No. 13 (mailed 5/22/02) and Section 9 of Paper No. 21 (mailed 11/10/03).

Art Unit: 1762

6. Claims 8-14 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over White (386 or 309), in view of Sakamoto et al or Yaginuma et al or Nimmagadda as applied to claims 1-5, 7, 8, 15-17, 24-25, 27-28, 32-50, 52-57, 59-62, 67-68, 70-81, 85-88, 90-95, 98-103, 105, 111-114, 118-129 and 132 above, and further in view of White (4,667,620) as applied in Section 6 of Paper No. 13 (5/22/02).

7. Claims 96, 97 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over of White (386 or 309), in view of Sakamoto et al or Yaginuma et al or Nimmagadda as applied to claims 1-5, 7, 8, 15-17, 24-25, 27-28, 32-50, 52-57, 59-62, 67-68, 70-81, 85-88, 90-95, 98-103, 105, 111-114, 118-129 and 132 above, and further in view of Mattox (3,329,601) as applied in Section 8 of Paper No. 13.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over White (309), in view of in view of Sakamoto et al as applied to claims 1-5, 7, 8, 15-17, 24-25, 27-28, 32-50, 52-57, 59-62, 67-68, 70-81, 85-88, 90-95, 98-103, 105, 111-114, 118-129 and 132 above, and further in view of Section 10 of Paper No. 13 and as discussed above.

9. Applicant's arguments filed 6/23/2006 & 10/4/2006 and discussed above have been fully considered but they are not persuasive.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1762

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

12/11/2006


MARIANNE PADGETT
PRIMARY EXAMINER